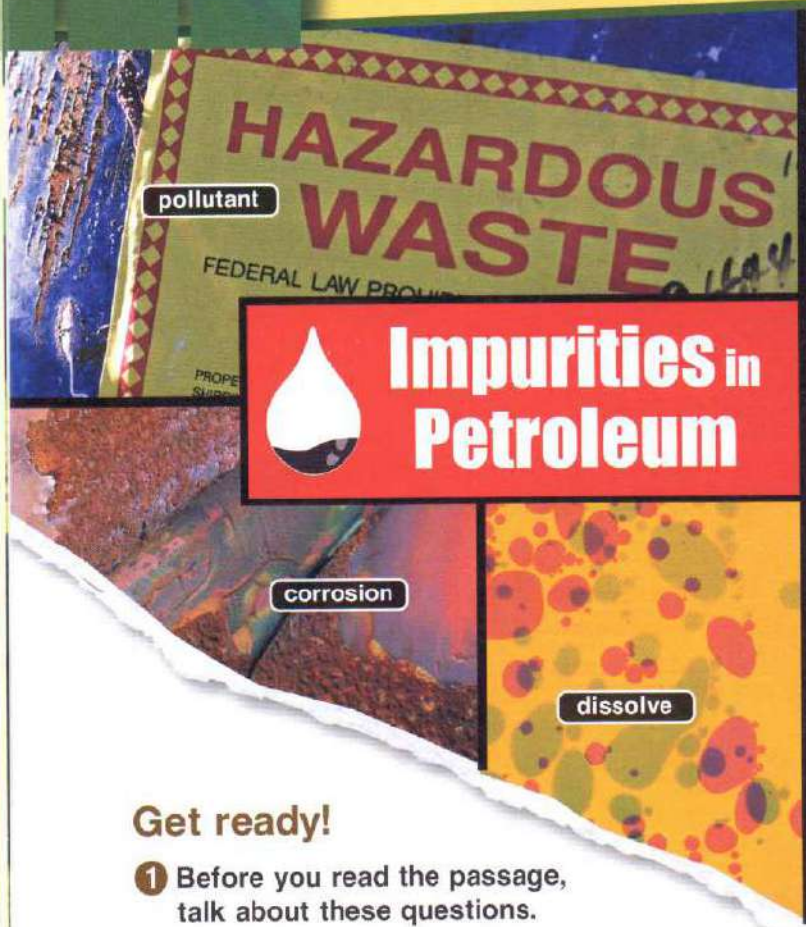
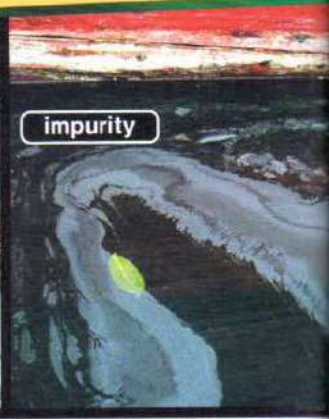
3 Impurities in petroleum





Petroleum sometimes contains **impurities**. These impurities cause the oil to be unusable in its crude state. Oil may contain **dissolved** hydrogen sulfide and **metals**. Oil can also contain carbon dioxide. High **concentrations** of these **pollutants contaminate** the oil, making it unusable. For example, **excess** carbon dioxide causes major **damage**. Carbon dioxide can cause **corrosion** in vehicles and other equipment. Impurities lower the **value** of petroleum. That is why it is refined before sale.

Many countries have strict oil-refining regulations. These regulations ensure that refining companies **eliminate** the bad substances. However, even refining the oil may not make it better. This is why engineers test the oil **residing** in potential drill sites. They must take into **consideration** whether the oil is worth drilling. The oil may be too contaminated to try to refine. In these cases, the engineers look for a new drilling site.

Get ready!

1 Before you read the passage, talk about these questions.

1 What kind of damage could impure petroleum do to a car engine?

2 What are some things which must be removed from petroleum?

Reading

2 Read the passage. Then, choose the correct answers.

1 What is the purpose of the article?

A to discuss oil impurities
B to argue for stricter refining regulations
C to explain how engineers choose drill sites
D to list methods of removing impurities

2 Which is NOT listed as a result of impurities in petroleum?

A The value of petroleum is reduced.
B Equipment may be damaged.
C Drilling sites become polluted.
D The price of refining it increases.

3 Which of the following can cause corrosion?

A hydrogen sulfide C concentrated oil
B dissolved metals D carbon dioxide

Vocabulary

3 Match the words (1-8) with the definitions (A-H).

1 __ value
2 __ impurity
3 __ reside
4 __ dissolve
5 __ consideration
6 __ damage
7 __ metal
8 __ contaminate

A to become absorbed into a liquid
B the destruction of something
C to make something dirty or polluted
D an object's monetary or sentimental worth
E to be present in a certain area
F a hard element that develops naturally in the ground
G a contemplation or deliberation on something
H a substance that makes something imperfect or unclean

4 **Choose the sentence that uses the underlined part correctly.**

1 A Sulfur dioxide is an air pollutant.
B Metals may eliminate in oil before it is refined.

2 A The concentration of hydrogen sulfide in the oil was high.
B The refining process contaminates the petroleum.

3 A The engineers decided to reside a new reservoir.
B Excess impurities lower the value of petroleum.

4 A The damage of the petroleum is reduced by impurities.
B The pollutants were eliminated from the petroleum.

5 **Listen and read the passage again. Why must oil be refined?**

Listening

6 **Listen to a conversation between a company executive and a field engineer. Mark the following statements as true (T) or false (F).**

1 ___ The petroleum has low concentrations of carbon dioxide.
2 ___ The man thinks they should not drill at the drill site.
3 ___ The man will take more samples in the same area.

7 **Listen again and complete the conversation.**

Company Exec.: Hi, Seth. Did you get those results from the 1_____ _____?
Engineer: Yes, I did. It doesn't look good.
Company Exec.: What's the problem?
Engineer: The petroleum is loaded with 2_____.
Company Exec.: What did the tests find?
Engineer: There are traces of sulfur and a fairly 3_____ _____ of carbon dioxide.
Company Exec.: Do you think we should take more samples?
Engineer: We could take a few more samples just to be sure. But I don't think this is a good 4_____ _____.
Company Exec.: You may be right. The cost of 5_____ _____ _____ would probably be really high.
Engineer: Let me take a few more samples from 6_____ _____.

Speaking

8 **With a partner, act out the roles below based on Task 7. Then switch roles.**

USE LANGUAGE SUCH AS:

Did you get those ...?
There are traces of ...
Do you think ...?

Student A: You are an oil company executive. Talk to Student B about:

- the petroleum sample results
- his or her recommendation about more samples
- the cost of refining the petroleum

Student B: You are a field engineer. Talk to Student A about the test results.

Writing

9 **Use the passage and the conversation from Task 8 to fill out the following lab report for the petroleum sample.**

Petroleum Sample
Lab Report

Test results: _____
_____
_____

More samples needed? Explain: _____
_____

Recommendation for site: _____
_____
_____